

The American Species of Xiphopteris

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(Concluded)

The U. S. National Herbarium has 46 collections named *P. limula* from Costa Rica, 11 from Panama, one from Guatemala, and one from Colombia.

✓6. *X. Hartii* (Jenman) Copel., comb. nov.

Polypodium Hartii Jenman, Journ. Bot. **24** (1886) 272; Bull. Bot. Dept. Jamaica II. **4** (1897) 105; Hieronymus, Hedw. **44** (1905) 95; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 546, pl. 33; Proc. Biol. Soc. Washington **60** (1947) 125.

Described from Jamaica, and now known also from Porto Rico, Grenada, Guadeloupe (apparently common), and Dominica.

6a. *Polypodium nutatum* Jenman, Journ. Bot. **24** (1886) 272; Bull. Bot. Dept. Jamaica II. **4** (1897) 115; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 547.

These two "species" were described at the same time, from the same place, and both have since been found on other islands. Of *P. nutatum*, Jenman wrote (1897): "It is a narrower species than the next (*P. Hartii*), both being very close allies". Maxon said his largest specimen of *P. nutatum* was twice the height of *P. Hartii*, but I can see no real difference between them.

✓7. *X. organensis* (Gardn.) Copel., comb. nov.

Grammitis organensis Gardn., Hook., Icon. Pl. **6** (1843) pl. 509.

Grammitis organensis Fée, Crypt. Vasc. Brés. **1** (1869) 264, pl. 78, fig. 1.

Polypodium organense Mett., Pol. (1857) 39 (no. 25); Fée, Crypt. Vasc. Brés. 1: 90; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 548.

Described from the Organ Mountains, and known only from Brazil. Fronds commonly 10 cm. long and 5 mm. wide, lobed hardly half-way to the costa, the lobes rounded. The treatment of this species by Fée is peculiar. On p. 90, he presents *P. organense* (Gardn.) Mett., on faith in Mettenius, but not seen. On p. 264, and pl. 78, fig. 1, he describes *G. organensis* Fée, as a new species. They seem to be identical; but, if they are not so, *G. organensis* Fée has no valid name. Its type is *Glaziou 3573* (isotype, US).

✓ 8. *X. Schenckii* (Hieron.) Copel., comb. nov.

Polypodium Schenckii Hieron., Hedw. 44 (1905) 87; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 549.

Described from Santa Catarina, and known only in Brazil (northward to Minas Geraes). Uniformly smaller and much narrower than *X. organensis*, and incised rather than lobed. Besides the specimens cited by Maxon, the National Herbarium now contains *Pabst 609*, cited by Hieronymus in the original description.

✓ 9. *X. setosa* Kaulf., Enum. Fil. (1824) 275.

Grammitis setosa Presl, Tent. (1836) 208.

Polypodium setosum Mett., Pol. (1859) 33 (no. 6); Hieron., Hedw. 44 (1905) 91.

Polypodium micropteris C. Chr., Ind. Fil. (1906) 545; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 546.

Described from Brazil, and known only from there. This species was described at the end of Kaulfuss' Enumeration, and its inclusion in the genus makes the latter

conform in definition, not to his diagnosis (p. 85), but to my present usage. Kaulfuss' expression is "Capsulae e basi frondis ad apicem usque . . ."; or, as rendered by Hooker,² "dentato-pinnatifid for its whole length."

Subsequent to the original publication (and perhaps then), the species has been known by poor material—"sehr mangelhafte Fragmente" (Hieronymus, *l. c.*). Maxon's key (p. 543) reads, "lamina slightly pubescent, or, if subsetulose, the hairs mostly short, brittle, or caducous." Maxon succeeded in getting from Berlin a fragment of Mettenius' fragment of the type. This fragment of a poor fragment justifies Maxon's "subsetulose, the hairs . . . caducous." But Mettenius wrote "folia . . . setis rigidis, nigricantibus, sparse obsita". And Kaulfuss used "setosa" in the description as well as in the name. It should be accepted as a fact that *X. setosa* is setose. Of recognized species, *X. perpusilla* seems most to resemble it. As to priority, *X. setosa* is the third oldest species of the genus.

✓10. *X. perpusilla* (Maxon) Copel., comb. nov.

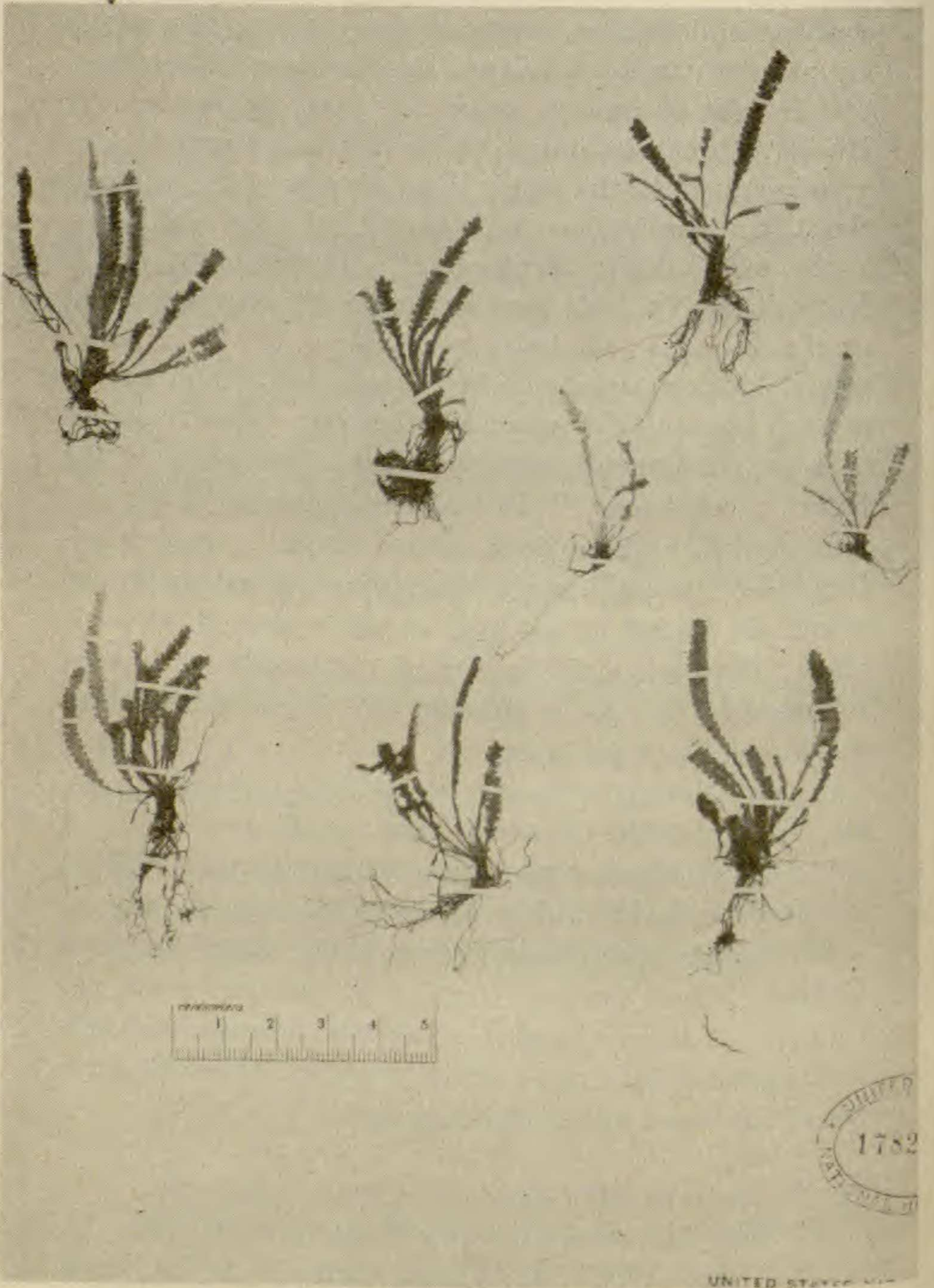
Polypodium perpusillum Maxon, Contr. U. S. Nat. Herb. 17 (1914) 409, pl. 13A.

Known by a single collection (*Ule*), from Serra de Caraça, Minas Geraes, Brazil. Occasional veins are forked. It may be suspected that the specimen is abnormal, and that in a more adult or perfect form the forking of the veins will be characteristic.

✓11. *X. Grisebachii* (Underw.) Copel., comb. nov.

Polypodium Grisebachii Underw., in C. Chr., Index (1906) 531; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 548.

² Sp. Fil. 4: 175.



XIPHOPTERIS MORTONII, TYPE

Polypodium exiguum Griseb., Fl. Brit. W. Ind. (1864) 701; Hieron., Hedw. **44** (1905) 97, *nec alior.*

Described from Jamaica, whence there are many collections. Known also from Martinique and Guadeloupe.

12. *Xiphopteris Mortonii* Copel., sp. nov. (*Plate 8.*)

X. pusilla, rhizomate 1 mm. crasso erecto, paleaceo, paleis lanceolato-ovatis 0.5–1.2 mm. longis integris glabris sparsis, et basibus congestis stipitum et radicibus dense immersis; stipitibus ca. 1 cm. longis; lamina usque ad 5 cm. longa, ca. 3 mm. lata, obtusa, basi decurrente, tenuiter herbacea, pube minuta pallida vestita, demum glabrescente, $\frac{2}{3}$ ad costam lobata, lobis contiguis fere imbricatis, 1 mm. longis latisque, apice late rotundatis; venis perinconspicuis, fertilibus furcatis, ramo acroscopico basali brevi; soro parvo ad costam appresso, sporangiis nudis.

✓ Cuba: Oriente: "Crest of Sierra Maestra, between Pico Turquino and La Bayamesa; alt. 1350 meters," *Morton & Acuña* 3547 (U. S., type).

Similar to *X. Grisebachii*, but distinguished by the (minute) pubescence, the broad, crowded lobes, and the position of the sorus, appressed to the costa. The veins are so inconspicuous that I would not be sure they were forked, except that the position of the elongate young sorus shows that the fertile veinlet is parallel to the costa.

✓13. *X. Mitchellae* (Baker) Copel., comb. nov.

Polypodium Mitchellae Baker, in Hemsl., Biol. Cent. Am. III (1885) 664; Maxon, Contr. U. S. Nat. Herb. **17** (1914) 410, *pl. 14*; (1916) 548.

Described from British Honduras, whence, and from Guatemala, several collections are now known; Nicaragua; Panama.

- 13a. *Polypodium Shaferi* Maxon, Contr. U. S. Nat. Herb. **17** (1914) 410, *pl. 13B*; (1916) 549.

Described from Cuba (type, *Shafer* 8071); also, *Shafer* 3475; *Clément* 2462, 4977, 5320; *Morton & Acuña* 3141; from Santo Domingo, *Ekman* 14884, *Abbott* 291a.

When *P. Shaferi* was described, it seemed different from *P. Mitchellae* in stature (the latter perhaps twice as large), pubescence of the lamina, and most notably in the paleae. In 1916, Maxon redescribed the paleae of *P. Shaferi*, showing them to be much alike in the two species. As to stature, some more recent continental collections—*Bartlett* 11727 and *Johnson* 888—are as small as *P. Shaferi*. The pubescence of the upper surface of the blade of *P. Shaferi* can be lost with age. Because of the densely crowded, hirsute stipe-bases, the paleae of both species seem to be completely suppressed in many specimens, a phenomenon already familiar in *Grammitis*.

- ✓14. X. **Cookii** (Underw. & Maxon) Copel., comb. nov.
Polypodium Cookii Underw. & Maxon, Contr. U. S. Nat. Herb. **17** (1914) 408; (1916) 547.

Type from Alta Verapaz, Guatemala, *Cook & Griggs* 80. Now known from Costa Rica also (*Standley* 37725, *Brenes* 4051). As described by Maxon, the sorus is almost axial on the acroscopic side of the vein. This position, on the side of the vein instead of on top of it, betokens an abortive branching of the vein.

- ✓15. X. **caucana** (Hieron.) Copel., comb. nov.
Polypodium caucanum Hieron., Bot. Jahrb. **34** (1904) 503; Hedw. **44** (1905) 96; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 548.

Type from Colombia, Prov. Cauca, alt. 2300 m., *Lehmann* 3257. Now known also from Ecuador, Venezuela, British Guiana, Panama, Costa Rica, and Nicaragua.

Most similar to *X. Cookii*. The sorus is well above the base of the vein; but the bending of the vein at the sorus indicates in this case too a suppressed fork. In general, this species seems to be larger than *X. Cookii*. The shape of the segments is distinctive. The fronds are conspicuously stout and rigid.

- ✓16. *Xiphopteris zurquina* Copel., sp. nov. (*Plate 9.*)
Polypodium zurquinum Maxon, in herb.

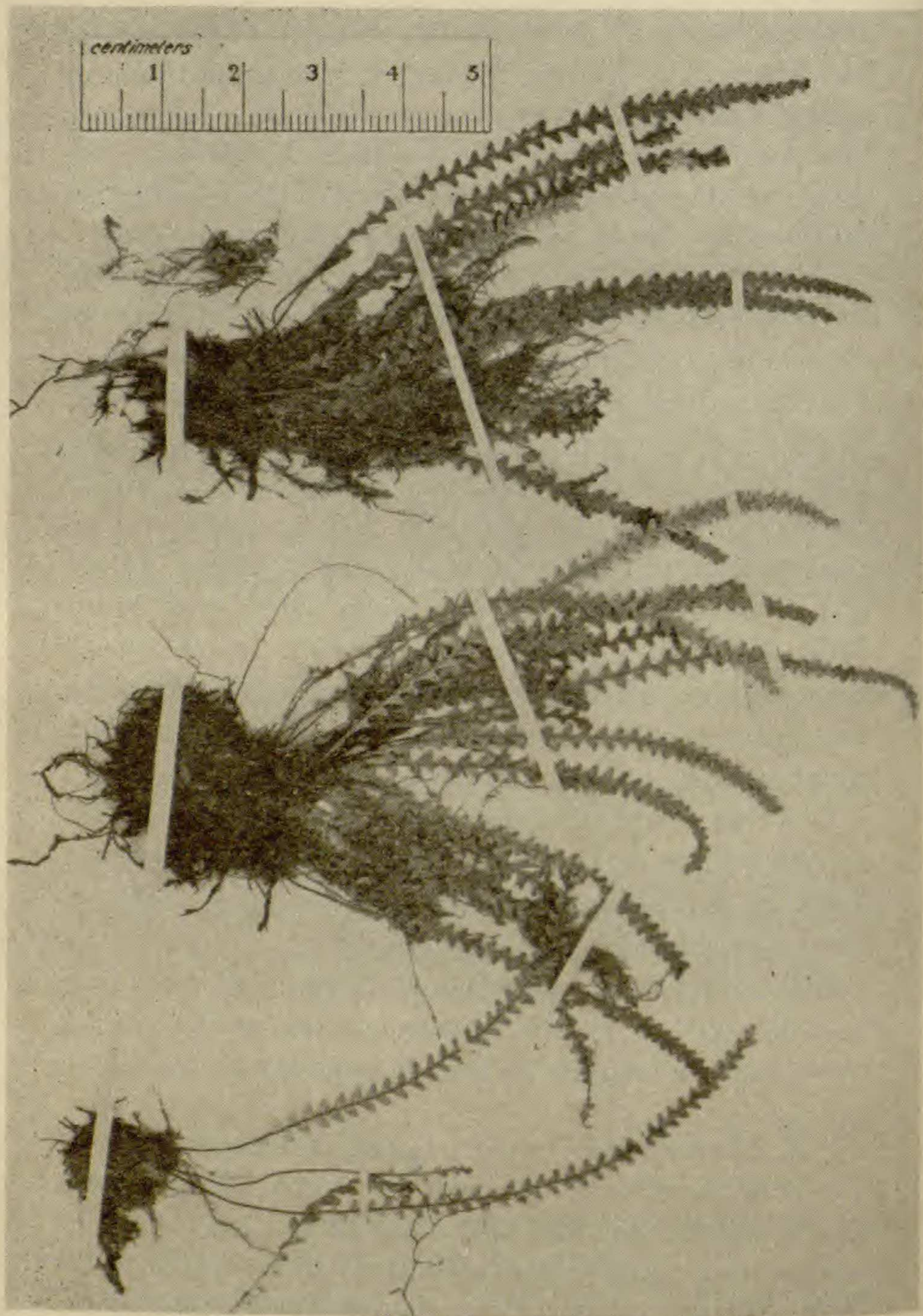
X. gracillima, paleis rhizomatis lanceolatis 2 mm. longis integris (non ciliatis); stipitibus dense fasciculatis, 1–2 cm. longis, ca. 0.25 mm. crassis, decidue setosis; lamina ca. 6 cm. longa, vix 4 mm. lata, utrinque breviter angustata, setis 1 mm. longis adspersa, herbacea, ad costam gracilem pinnata; pinnis 1 mm. latis, apice rotundatis, basi paullo dilatatis, utroque latere costae 25–30; vena simplici, inconspicua, sub hydathodo terminante; soro infra mediam longitudinem venae imposito; sporangiis nudis, cellulis incrassatis annuli ca. 14.

✓Costa Rica: "Cerros de Zurqui, northeast of San Isidro, Provincia de Heredia, altitude 2000–2400 meters." *Standley & Valerio* 50495 (U. S. type); also, Cerro de Las Lajas, *Standley & Valerio* 51598.

Related to *X. caucana* and *X. Cookii*, but more delicate than either; like *X. caucana* in the position of the sorus, but the vein not so bent as to suggest a forking.

- ✓17. *X. blepharidea* (Copel.) Copel., comb. nov.
Polypodium blepharideum Copel., Univ. Calif. Publ. Bot. **19** (1941) 304, pl. 64.

Type and only known collection, *Mexia* 8147a, from Peru (Huánuco, Distr. Churubamba, Cresta Santo Toribio, alt. 2000 meters). The lower half of the frond is pinnate to the costa.



XIPHOPTERIS ZURQUINA, TYPE

- ✓18. *X. serricula* (Fée) Copel., comb. nov.

Polypodium serricula Fée, Gen. Fil. (1850-52) 238; 6^e Mém. Foug. 6: 9, pl. 7, fig. 1; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 550.

Described from Guadeloupe, where it seems to be very common, and known also from Dominica and Martinique. Mettenius (Pol. 40) reduced this species to *P. trichomanoides*, and was followed by his successors until Maxon. It is conspicuously different, however, in the shape of the segments, which are not gibbous in *X. serricula* because the fertile vein does not extend beyond the sorus. The fronds are about 5 mm. wide—not 5 cm. as misprinted by Fée in both of his texts. His figure is correct.

- ✓19. *X. Williamsii* (Maxon) Copel., comb. nov.

Polypodium Williamsii Maxon, Contr. U. S. Nat. Herb. 17 (1916) 547, pl. 34.

Because of the largely wingless rachis, this is in appearance the most distinct species of the genus.

- ✓20. *X. truncicola* (Klotzsch) Copel., comb. nov.

Polypodium truncicola Klotzsch, Linnaea 20 (1847) 374; Mett., Pol. (1856) 40; Hook., Sp. Fil. 4 (1862) 178; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 553.

Ctenopteris truncicola J. Smith, Hist. Fil. (1875) 184.

Klotzsch cited two Venezuelan collections—*Moritz* 252 (forma *major*), from Colonia Tovar, and *Moritz* 333 (forma *minor*), from Mérida, any essential difference between them, as he understood it, being in size. Mettenius cited the same two collections. Hooker did also, and, in addition, *Fendler* 211, from Venezuela, two collections by Jameson from Ecuador, and a Jamaican collection (*Purdie*), likely to be *P. basiattenuatum* Jenman. He re-

marked that "Some of the Ecuador specimens are very fine, large, and bear long rich brown-coloured hairs very copiously, not only on the margins of the fronds, but on the superficies; still I have numerous samples showing, as it appears to me, a passage from the one species to the other" [i.e., *P. truncicola* to *P. trichomanoides*].

Maxon cited only *Moritz* 333 and *Fendler* 211. The National Herbarium now contains *Moritz* 252 and 333 (2 sheets); *Fendler* 211 (3 sheets); *Schlumberger*, from Guiana; *Pittier* 9997, from Venezuela; *Killip & Garcia* 33163, and *Daniel* 1727, from Colombia; *Steyermark* 53464, and *Wiggins* 10402 and 10412, from Ecuador. In my own herbarium is a good specimen of *Moritz* 252. Altogether, this is rich, as well as authentic, material.

Moritz 252 must be the type collection, and is uniform; but the descriptions by both Klotzsch and Mettenius are compiled from both *Moritz* collections. Thus, "stipite nullo" applies to forma *minor*, but no. 252 has a short stipe, as described by Mettenius. The two might represent distinct species; but the specimens in hand and ascribed to *X. truncicola* are variable in a degree unfamiliar in the genus, wherefore I am disposed to regard forma *minor* as juvenile.

Forma *minor* is really sparsely setose. Forma *major*, the typical form, should never have been described as "sparsim" pilose. *Moritz* 252 is old material, moderately setose to the naked eye, but bearing so many broken bristles that it must in nature have been densely setose. The *Wiggins* collections from Ecuador are like those described from the same land by Hooker, setose beyond anything else in the genus, but the type must have been very similar when fresh.

Klotzsch described the segments as "integerrimis"; but Mettenius, with the same material, described them as "superne obtuse auriculatae vel semi-oblongae, obtusae, integerrimae vel hinc inde crenatae." One *Wiggins*

plant has many segments incised on the acroscopic side.

All students of this group since Mettenius have treated the presence or absence of setulae on the paleae as specifically diagnostic. Mettenius described the paleae of *P. truncicola* as "sparse setosis." Maxon's key distinguishes *P. truncicola* from *P. trichomanoides* (and some other species) by "scales of the rhizome with bristle-like cilia"; and his specimen of *Moritz* 252 includes strongly ciliate paleae. I detect no cilia on my specimen of this collection, nor on most specimens bearing the same name. One sheet of *Fendler* 211 bears two plants, one, as annotated by Maxon, bearing "scales ciliate"; the other, "scales not ciliate," and therefore "not *P. truncicola*." But this plant is altogether like *Moritz* 333 (forma *minor*). My own impression is that in this case the cilia on the paleae are not a diagnostic character.

- 20a. *Polypodium andinum* Hook., Second Cent. Ferns (1860) *Pl. VI*; Hieron., Bot. Jahrb. **34** (1904) 500; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 552.

Type from Ecuador; known also from Peru, Colombia, and Costa Rica.

"The fronds seem destitute of stipes, and are decurrent to their very base," (Hooker, *l. c.*). As far as the description shows, this is the most evident distinction from *X. truncicola*. If *P. andinum* is a distinct species, it includes forma *minor* of *X. truncicola*. It may be noted as a possible further distinction that *P. andinum* is lobed rather less than halfway to the costa, and *X. truncicola* somewhat more deeply.

21. *X. trichomanoides* (Swartz) Copel., Gen. Fil. (1947) 215.

Polypodium trichomanoides Swartz, Prod. (1788) 131; Syn. Fil. 33; Schkuhr, Krypt. Gew. 11, pl. 10; Hieron., Hedw. **44** (1905) 99; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 550, pl. 35.

Ctenopteris trichomanoides J. Smith, Hist. Fil.
(1875) 184.

Described from Jamaica, where it is very common, and known also from Cuba (*Clément* 1008), Guatemala (several collections), Venezuela (*Killip & Rohl* 37170), and French Guiana (*Leprieur*). A commonplace looking little plant except for the gibbous segments, a feature correlated with the prolongation of the fertile veinlet beyond the sorus. Because this was the first described of a very homogeneous group of species, its name has been misapplied to several others.

- ✓22. *X. basiattenuata* (Jenman) Copel., comb. nov.

Polypodium basiattenuatum Jenman, Bull. Bot.
Dept. Jamaica II. 4 (1897) 114; Maxon, Contr.
U. S. Nat. Herb. 17 (1916) 551, pl. 36.

Described from and common in the Blue Mountains of Jamaica; rare elsewhere in Jamaica. Its immediate relatives are *X. truncicola* and the comparatively unknown *X. Sherringii*.

- ✓23. *X. Sherringii* (Baker) Copel., comb. nov.

Polypodium Sherringii Baker, in Jenman, Journ.
Bot. 20 (1882) 326; Maxon, Contr. U. S. Nat.
Herb. 17 (1916) 552.

Jamaica: "Newton district of the Port Royal Mountains," rare; alt. 4000–5000 feet. Described as characterized by small stature (1½–2 inches long, 3 lines wide), densely congested fronds, sparse setae, and particularly by the "opaque, stiff" lamina, which eventually breaks away from the rachis. It is little known—perhaps by a single collection. I venture to transfer the name because if it blends with any other species it is with *P. basiattenuatum*, and *P. Sherringii* is the older name.

The National Herbarium contains three sheets from eastern Cuba—*Ekman* 5209, *León* 77715, and *Clément*

1736—identified as *P. Sherringii*. These are uniform—small (the largest frond 4 cm. long), not congested, not remarkably stiff, and notably sparsely setose. They can apparently be *X. Sherringii*, but hardly *X. basiattenuata*.

- ✓24. *Xiphopteris Killipii* Copel, sp. nov. (*Plate 10.*)
Polypodium Killipii Maxon, in herb.

X. rhizomate erecto, valido, paleaceo, paleis parvis (plerumque infra 1 mm. longis), lanceolato-ovatis, sub-integris, apiculatis, non ciliatis; stipitibus fasciculatis, 1 cm. longis, gracilibus (ca. 0.3 mm. crassis), setosis; lamina 15 cm. longa, 6–7 mm. lata, obtusa, basi angustata, tenuiter herbacea, setis 2 mm. longis sat dense vestita, ad alam angustam costae pinnatisecta; segmentis late oblongis, apice rotundatis et integris vel crenulatis, supra basin dilatatis et contiguis; venis omnino inconspicuis, furcatis sed ramo acroscopico tantum ad receptaculum sori sufficiente.

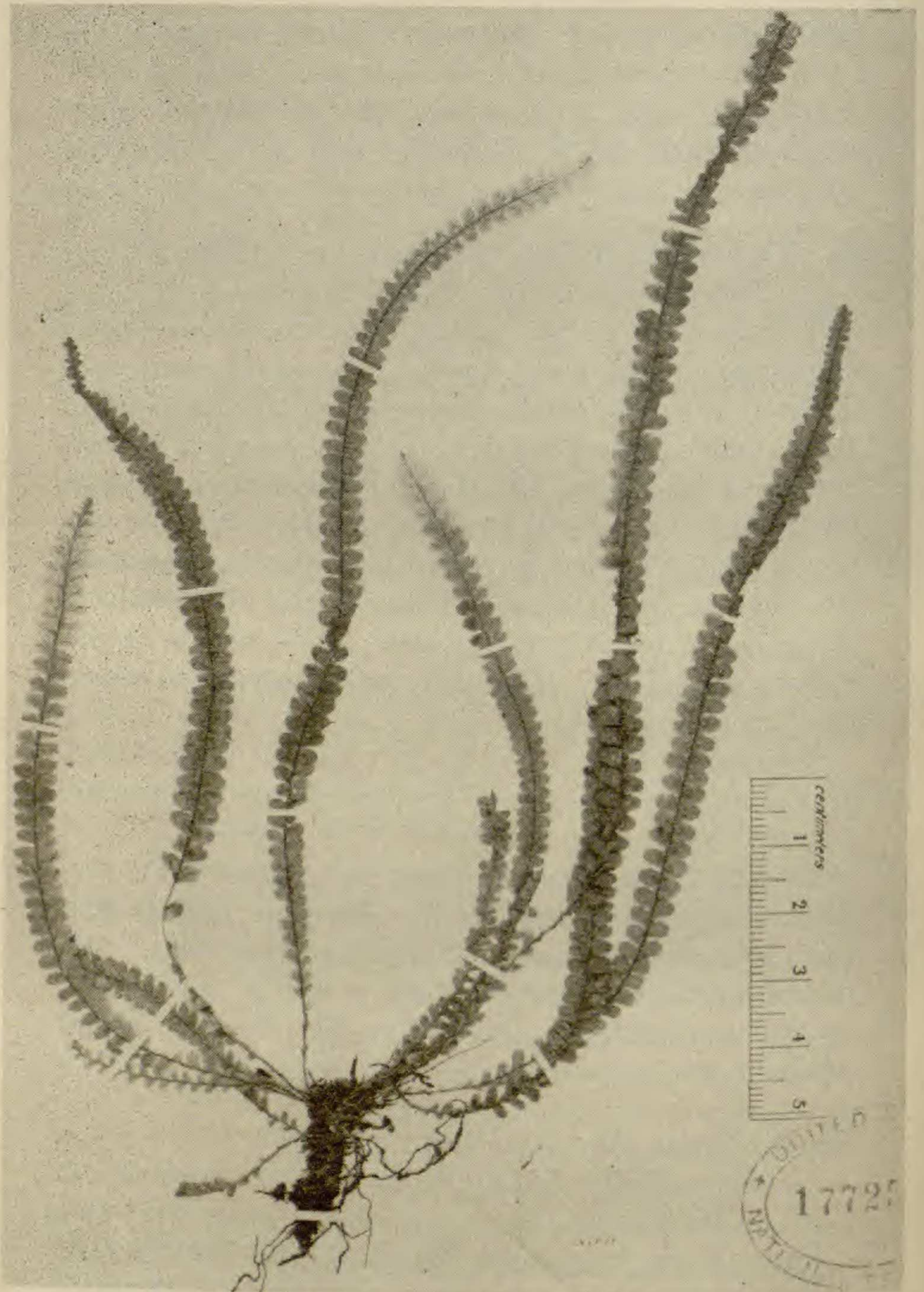
✓Colombia: "Dept. El Valle; San Antonio, west of Cali, near summit of Cordillera Occidental; alt. 1,900–2,350 meters," *Killip & Garcia* 33887 (U. S., type).

Near to *X. truncicola*, the most conspicuous distinctive feature being the shape of the segments, usually contiguous above the base, but with an open sinus. The microscopic characters are those of the genus—globose sporangium, filiform pedicel, annulus of about 13 indurated cells, and globose, granular spores.

- ✓25. *X. Buesii* (Maxon) Copel., comb. nov.

Polypodium Buesii Maxon, *Contr. Gray Herb.*
165 (1947) 72.

Peru: Type from Dept. Cuzco; Cerro Chuyapi, alt. 2400 meters. There is another specimen from the same place, and a third from Cabecera del Koribeni, all collected by Bues. Easily recognizable by the long attenu-



XIPHOPTERIS KILLIPII, TYPE

ation of the lamina to stipes which are themselves long for the genus. The paleae are mostly toothed, but not ciliate. The segments are narrowly oblong.

✓26. *X. nana* (Fée) Copel., comb. nov.

Polypodium nanum Fée, Gen. Fil. (1850-52) 238; Hieron. Hedw. **44** (1905) 102; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 553.

Polypodium exiguum Fée, Crypt. Vasc. Brés. I (1869) 89, pl. 37, fig. 1, nec alior.

Polypodium Blanchetii C. Chr., Bot. Tids. **25** (1902) 78.

Type from French Guiana; known also from British and Dutch Guiana, Trinidad, Venezuela, Colombia, and Brazil. Remarkably small; from the several other diminutive species, this is distinguished by the setulose paleae; also, the segments are rather remote. As described, and figured, *P. exiguum* Fée has one conspicuous peculiarity: the stipes are more or less half as long as the lamina. So long as it is known by a single collection, this is regarded as fortuitous, rather than as specifically diagnostic.

✓27. *X. daguensis* (Hieron.) Copel., comb. nov.

Polypodium daguense Hieron., Bot. Jahrb. **34** (1904) 504.

Type from the Dagua river, Colombia, at low elevations. A second collection, *Killip & Cuatrecasas* 38419, is from El Valle, "along highway from Buenaventura to Cali, alt. about 100 meters." While hardly contiguous, the segments are distinctly less remote than those of *X. nana*.

✓28. *X. hyalina* (Maxon) Copel., comb. nov.

Polypodium hyalinum Maxon, Contr. U. S. Nat. Herb. **17** (1914) 406; (1916) 554.

Costa Rica: Endemic (seven collections known). Fronds few; stipes terete; paleae conspicuous, up to 4 mm. long, their setulae small, weak, hyaline, inconspicuous (these setulae are distinct in character from those of species regarded as nearly related), segments erectopatent, oblong, each fertile one with two conspicuous hydathodes.

✓29. *X. setulosa* (Rosenst.) Copel., comb. nov.

Polypodium setulosum Rosenst., Fedde Repert. Sp. Nov. **10** (1912) 277; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 554.

Type from Costa Rica, whence there are 4 other collections. Endemic. The setae range up to 2.2 mm. in length.

✓30. *X. nimbata* (Jenman) Copel., comb. nov.

Polypodium nimbatum Jenman, Journ. Bot. **24** (1886) 271; Maxon, Contr. U. S. Nat. Herb. **17** (1916) 554, *pl.* 37.

Type from Jamaica, where it is said to be rare (6 collections in the National Herbarium); also in Cuba (9 collections), and Santo Domingo (*Ekman* H 12732, and *Valeur* 623). The setae are about 1.0 mm. long.

✓31. *X. Knowltoniorum* (Hodge) Copel., comb. nov.

Polypodium Knowltoniorum Hodge, Amer. Fern Journ. **31** (1941) 105, *pl.* 1, *figs.* 4-6.

Dominica: Several collections from the summit of Morne Trois Pitons; one collection from Guadeloupe. Fronds and segments broader than on most of its relatives; the lamina is attenuate downward for a third of its length, to a narrowly winged stipe. The bulge on the acroscopic side of the segment is more evident than is usual in *X. blepharodes*.

- ✓32. *X. blepharolepis* (C. Chr.) Copel., comb. nov.
Polypodium blepharolepis C. Chr., Ind. Fil. Suppl.
 I (1913) 58.
P. gracillimum Hieron., Hedw. **48** (1909) 250,
 pl. 12, fig. 18, non Copel. (1905).

Described from Ecuador; plants are at hand so determined from Peru and Colombia. Very close to *X. blepharodes*, even in such a detail as the setulae on the paleae. The shape of the segments seems to be distinctive. Both species are variable in the density of the pubescence. The presence of subgibbous fertile segments is in both cases due to extension of the fertile veinlet.

- ✓33. *X. blepharodes* (Maxon) Copel., comb. nov.
Polypodium blepharodes Maxon, Contr. U. S. Nat.
 Herb. **17** (1914) 407; (1916) 554.

Type from Costa Rica, whence there are 50 collections in the National Herbarium; also in Guatemala (4 collections), and Panama (7 collections).

- ✓34. *X. taenifolia* (Jenman) Copel., comb. nov.
Polypodium taenifolium Jenman, Bull. Bot. Dept.
 Jamaica II. **4** (1897) 114; Maxon, Contr. U. S.
 Nat. Herb. **17** (1916) 555.
P. Sintensisii Hieron., Hedw. **44** (1905) 101.

Type from Jamaica; type of *P. Sintensisii* from Porto Rico. Known also from Hispaniola, Montserrat, St. Kitts, Martinique, Guadeloupe, Grenada, Trinidad, Venezuela, Surinam, Colombia. A large plant, commonly 15 cm. and sometimes even 25 cm. tall, and rather stiffly erect.

DUBIOUS SPECIES

Polypodium gibbosum Fée, Mém. Foug. VI (1854) 8, pl. 2, fig. 2; Hieron., Hedw. 44 (1905) 100, at least as to the name; Maxon, Contr. U. S. Nat. Herb. 17 (1916) 556.

This species was based on a specimen sent misnamed by Galeotti to Fée, purporting to be from Oaxaca, Mexico. Nothing like it has been found again in Oaxaca. Comparison with the type, presumably in Rio de Janeiro, may show that it is some species, *X. blepharodes* for instance, now known by a later name.

EXCLUDED SPECIES

Grammitis wittigiana Fée, Crypt. Vasc. Brés. II (1873) 50, pl. 95, fig. 1.

This is included in *Grammitis* in my monograph of the genus, and is mentioned here because Hieronymus (Hedw. 44 (1905) 88) and Maxon (Contr. U. S. Nat. Herb. 17 (1914) 406) treat it as an immediate relative of *X. serrulata*.

Polypodium subflabelliforme Rosenst., Fedde Repert. Sp. Nov. 7 (1909) 306).

Polypodium flabelliforme Lam. var. *minus* Hook., Sp. Fil. IV (1862) 187.

The National Herbarium contains *Bues* 529, identified as this species. Each pinna has a strictly simple vein, making it, by definition, a *Xiphopteris*. Rosenstock describes the vein as simple, or once, or more rarely twice forked, and the sori as 1, 2 or 3 to the pinna. These features make it a *Ctenopteris*, which is the apparent affinity of *Bues*' specimen.

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